NOTES.

THE list of honours conferred upon the occasion of the King's birthday includes the names of three Fellows of the Royal Society. The Order of Merit has been conferred upon Dr. A. Russel Wallace, F.R.S.; Prof. J. J. Thomson, F.R.S., has been knighted; and Dr. J. Hutchinson, F.R.S., has received a like honour. Other recipients whose names are known in the scientific world are Principal Macalister, Glasgow University, who has been appointed a Knight Commander of the Order of the Bath (K.C.B.); Sir G. Anderson Critchett, who has been made a baronet; Dr. T. Oliver and Dr. N. Bodington, Vice-Chancellor of the University of Leeds, both of whom have received the honour of knighthood.

WITH deep regret we have to announce that Prof. W. E. Ayrton, F.R.S., died on Sunday morning at sixty-one years of age.

IT was announced at the West Ham Town Council on Monday that the freedom of West Ham had been privately conferred upon Lord Lister at his house in the country, as he was prevented by a weak state of health from receiving the distinction in public. Lord Lister was born at Upton, Essex, in the borough of West Ham.

WE are asked to announce that on November 28, at 2 p.m. promptly, Mr. Abbott H. Thayer, the discoverer of the concealing effect of the counter shading of the costumes of animals, will give at the Zoological Gardens, Regent's Park, a further demonstration of the obliterative effect of the patterns of so-called "conspicuous" species, illustrated with actual bird-skins, butterflies, &c., as well as with artificial apparatus and drawings. Visitors are requested to assemble in front of the superintendent's office.

MM. EDMOND PERRIER and Van Tieghem are to represent the Paris Academy of Sciences at the Darwin centenary in Cambridge next June.

THE death is announced, at the age of sixty-five, of Prof. Alfred Ditte, professor of chemistry in the University of Paris, and member of the Paris Academy of Sciences.

A REUTER telegram from Ottawa announces the death of Dr. James Fletcher, Dominion entomologist, and honorary secretary of the Royal Society of Canada.

SIR DANIEL MORRIS, K.C.M.G., has been elected an honorary life Fellow of the Royal Horticultural Society in recognition, among other matters, of his services to our Colonial Empire, and especially to the West Indies.

THE death is announced of Dr. Cecil G. Dolmage, a Fellow of the Royal Astronomical Society and many other learned societies at home and abroad, and author of "Astronomy of To-day" and other works.

MR. W. K. DAVEY has given the sum of 1000*l.* towards the initial expenses of the Australian Institute of Tropical Diseases shortly to be established at Townsville, North Queensland.

THE American Association will hold a special Darwin celebration meeting on January 1, 1909, when a number of papers upon subjects bearing upon evolution will be presented by leading naturalists. It is intended to issue the papers in a memorial volume.

WE notice with regret the announcement of the death of Mr. Archibald J. Little, who did much geographical work in the interior of Asia. Mr. Little was known as the author of "Mount Omi and Beyond," "Through the Yangtse Gorges," and "The Far East." He explored the confines of Tibet both from the Chinese and Himalayan sides.

THE Astronomical and Astrophysical Society of America will hold its next meeting, in the summer of 1909, probably at the Yerkes Observatory. Acording to *Science*, the exact date has not yet been fixed, but it is expected to precede by a few days the Winnipeg meeting of the British Association, which will open on August 25, 1909.

A CONFERENCE of fruit-growers will be held at the South-Eastern Agricultural College, Wye, on Friday, November 27. The chair will be taken by Mr. C. W. Radcliffe Cooke, and among the subjects to be discussed are insecticides, by Mr. S. Pickering, F.R.S., and spraying and spraying machinery, by Mr. E. S. Salmon.

PLANS for a new Norwegian Polar expedition were described by Captain Amundsen at a large meeting of the Geographical Society held at Christiania on November 10, and attended by the King of Norway. From the *Times* we learn that Captain Amundsen's plan is to go with Dr. Nansen's old ship the *Fram* to Cape Barrow, the northernmost point of Alaska, and thence north. The ship will drift with the ice across the Polar ocean. The *Fram* will carry provisions for seven years, but the voyage is expected to last five.

ON November 6 an inaugural meeting of the new Aëroplane Club was held in London, when it was decided to form a club devoted to the development of aërial navigation by machines heavier than air. A small provisional committee was appointed to submit to the club the names of gentlemen for service on a general committee.

THE Paris correspondent of the *Times* reports that M. Barthou, the French Minister of Public Works, announced in the Senate on November 5 that the sum of 4000*l.* is to be devoted by his department to the encouragement of aërial locomotion. From the same source we learn that the International Sporting Club of Monaco has offered the sum of 4000*l.* to be competed for at an international aëronautical meeting to be held at Monaco from January 24 to March 24, 1909. The length of the course will be about six miles. The first prize will be 3000*l.*, the second 600*l.*, and the third 40*l.*

IT is with regret that we announce the death of Dr. John M. Thome, the indefatigable director of the Cordova Observatory, who since the retirement of Dr. Gould conducted the work of that institution with marked ability and success. By his loss science is deprived of an ardent and able observer, one who was willing to forsake the more attractive departments of astronomical research and to labour at the very necessary drudgery connected with the compilation of a southern Durchmusterung and similar work, necessitating the wearying and continual repetition of the same process. In some directions sufficient recognition has not been made of the assiduous efforts of Dr. Thome to carry on the work of the observatory with the efficiency and with the magnificent output that characterised Dr. Gould's enterprising direction, and unfortunately in this place we have not room to do justice to his twenty-three years' administration. A very limited acquaintance with the volumes issued from the Argentine Observatory must convince anyone, not only of the value and amount of observation that has been accomplished, but of the difficulties against which Dr. Thome continually struggled. A possibility of war has more than once been made the excuse by the Minister of Public

Instruction for reducing the staff, and we can well sympathise with the director in his endeavour to maintain the activity and honourable record of the institution with a diminishing staff consequent upon a vanishing budget. Trustworthy services by competent assistants could not be secured, and the energies of the director had to be devoted to examining and correcting the operations of those who were both inefficient and negligent. We may record, however, his own statement made in 1904, which shows that under his administration there had been produced four volumes giving the places of 630,000 stars with their magnitudes, resulting from more than 1,800,000 observations, together with eighteen charts containing 550,000 stars. These figures are quite sufficient to demonstrate his industry, but if we remember that in addition to this work Dr. Thome cheerfully gave aid in the matter of photographing a zone of the Astrographic Chart, it will be admitted that an amount of work stands to his credit which entitles him to rank among the earnest and devoted supporters of astronomical science.

ANOTHER astronomer who has passed away after rendering long and efficient services is Mr. Andrew Graham, whose name was familiar to two generations of scientific workers, for nearly seventy years have elapsed since he began his astronomical career at Colonel Cooper's observatory at Markree, in Ireland. It was Mr. Graham's fortune to take part in two movements, which have had unexpected developments—the discovery of asteroids and the construction of a Durchmusterung. Before the number of small planets had reached double figures he added Metis to the list, and he lived to see the number grow inconveniently large. The zones of ecliptic stars observed at Markree were among the early efforts of a mode of observing which has since been extended to the whole heavens, to the great advantage of astronomy and the convenience of observers. It was fitting that he who had laboured at the pioneer work of determining approximate positions should end his career by sharing in the magnificent task of giving accurate places to the stars contained in Argelander's survey. For nearly forty years Mr. Graham worked at the Cambridge Observatory under Prof. Adams, during which time he devoted himself with unwearying zeal mainly to the observation of the zone allotted to the Cambridge Observatory in the scheme inaugurated by the Astronomische Gesellschaft. At the advanced age of ninety-three this industrious astronomer has departed, mourned by many friends in the University of Cambridge, where his long services were gratefully acknowledged, and where his memory will long be treasured.

WE have to acknowledge the receipt from the authors, Messrs. Gibbs and Barraud, of a copy of a paper, from the Transactions of the Hertfordshire Natural History Society, on the two-winged flies of that county.

To Captain S. S. Flower we are indebted for a copy of a list of the zoological gardens of the world, drawn up by himself, and published in Egypt. The number of such gardens is eighty.

AN association has been established in connection with the Norwich Museum, of which the first report is now before us. Its object is to arrange demonstrations illustrative of economic natural history and horticulture. A considerable number of such exhibits was displayed during last year, and apparently aroused a fair amount of public interest.

FOR the last few years the council of the Natural History Society of Northumberland, Durham, and Newcastle-on-Tyne has had to record a decrease in the membership roll of that body. In the report for the past year it is satisfactory to see that a slight increase is recorded in this respect, although a considerable addition is required in order to put the society on a satisfactory footing. The list of additions to the museum is comparatively large.

A FINELY illustrated account, by Mr. F. Heatherley, of a visit to the ternery at Wells-by-the-Sea forms the opening article in the October number of the *Zoologist*. Two species are found nesting on this site, namely, the common and the lesser tern; they have separate colonies of their own, probably for the reason that they would disagree if mixed. The author adds that the common tern, when on the wing, may be distinguished from the Arctic tern by its much less jerky flight and its habit of hovering, in kestrel-fashion, when fishing. It is also reported to carry its tail closed more frequently than is the case with the Arctic species.

WE have received copies of the second parts of the *Sitzungsberichte* and of the *Verhandlungen* for 1907, issued by the Naturhistorischen Vereins der preussischen Rheinlande und Westfalens. The former contains a large number of short articles, mainly devoted to local zoology, botany, palæontology, and geology, and to refer to any of these separately would appear invidious. The *Verhandlungen* comprise five longer papers, also mainly on local subjects, Mr. R. Schaufs discussing the copepods and cladocerans of the Bonn district, Mr. K. Röttgen the coleopterous fauna of the Rhine province, Mr. W. Bruhns volcanic bombs from Schweppenhausen, and Mr. A. Hasebrink the Cretaceous formation of the Teutoburg Forest.

THE various methods of developing and preparing fossils for exhibition or for the purpose of study are discussed at considerable length by Dr. F. A. Bather in a paper read before the Ipswich Museums' Conference, and published in the September issue of the *Museums Journal*. In cases of hard and intractable matrix something may in certain instances be accomplished by purely physical methods, such as heating limestones and then plunging them into cold water, by splitting ironstone nodules with the aid of a freezing mixture, or by saturating the rock, when sufficiently porous, with a quickly crystallising solution like magnesium sulphate, when the act of crystallisation loosens the particles of the superficial layer. In other instances, however, it is necessary to resort to chemical agents of various kinds.

To the September number of the *American Naturalist* Prof. T. D. A. Cockerell contributes a paper on some of the resul s of the expedition sent from Colorado to collect the Tertiary fossils of Florissant. In addition to the large number of species of insects, one of the most interesting fossil types obtained is *Trichophanes foliarum*, an aberrant fish of the perch group originally described from Nevada. In Florissant these fish apparently lived in open water during the great glaciation, entirely cut off from the southern fauna; they were accompanied by another waning type—a species of bowfin (Amia). As regards the flora, the great problem to be determined is whether certain leaves indicate representatives of the Proteaceæ, a group now confined practically to the southern hemisphere. As in the case of the European fossils which have been assigned to the same group, no one, according to the

author, can say definitely that these remains are not proteaceous. If they be referable to that group, we have, in Prof. Cockerell's opinion further evidence of a land-connection between the great southern continents. In our own view this is not so, as the supposed Proteaceæ might apparently have travelled from north to south along the main continental lines.

IN describing the skull of a domesticated dog from a prehistoric station of the Hallstatt period, near Karlstein, Amtsgericht Reichenhall, Dr. T. Studer (*Mitt. naturfor. Ges. Bern.*, 1907, p. 155) takes the opportunity of reviewing the state of our knowledge of prehistoric dogs generally. In the Palæolithic epoch we have *Canis poutjatini*, an animal of the size of a German sheepdog, with all the general characters of *C. familiaris*, but showing affinity with the dingo of Australia and *C. tenggerianus* of Java. This dog probably lived with Palæolithic man in a half-wild condition, and by crossing with the wolf seems to have given rise to a breed like the "laiki" of Siberia, this being represented by *C. inostranzewi* of Lake Ladoga and the Phalbauten of Lake Neuenburg, while by a cross with a flat-headed wolf arose the Neolithic *C. leineri*, the ancestral form of the modern deerhounds. In another line we have from *C. poutjatini* the sheepdogs, and in yet another the hound group, the earliest representatives of which are *C. matris-optimae* and *C. intermedius* of the Bronze age. Perhaps by further crossing with the wolf or with *C. inostranzewi* was produced the small *C. familiaris palustris* of the Pfahbauten. Crossing of the larger breeds, aided perhaps by intermixture with high-skulled wolves, gave rise to the boarhound group, to which the Karlstein skull pertains, this group not making its appearance until the Glacial period. The group seems to have been characteristic of the Alpine region, where it is still represented by the St. Bernard.

THE whole of the conjoint issue of Nos. 1–3 of the *Bulletin de la Société Impériale des Naturalistes de Moscou* for 1907, comprising 430 pages and six plates (which has just been issued), is devoted to a paper by Prof. A. N. Sewertzoff, of St. Vladimir University, Kiew, on the development of the muscles, nerves, and limbs of the lower four-limbed vertebrates, with special reference to a theory relating to the pentadactylate extremities of vertebrates in general. The author claims to be the first to have investigated the subject from the point of view of the muscles and nerves, previous workers having confined their attention to the skeleton. It is considered that in the ancestral Tetrapoda (Protetrapoda) the skeleton of the free extremities was composed of a small number of skeletal rays, probably not exceeding seven, such a type of extremity being evidently derived from a sparsely rayed fin. On the pre-axial side the number of rays (four) must have been greater than on the post-axial (two). Each ray was segmented, and consisted of a large number of similarly formed short elements, such elements being most numerous in the main axis and least so in the peripheral rays. The main axis of the protetrapodous fin formed a right angle with the spinal axis. In many respects the fore-fin of Ceratodus approximates to this ancestral type, but it must be assumed that the Tetrapoda are derived from a form in which the fins had a horizontal direction. Such a direction probably existed in the ancestors of Ceratodus, whence it may be inferred that the extremities of the Pentadactylia and the Dipnoi have had a divergent evolution. Accordingly, it seems probable that the pentadactylate extremity has been evolved from a "dipnopterygium" which was specialised towards the Ceratodus type. The resemblance to the latter may, indeed, be partly due to convergence, but the author is nevertheless convinced that Dipnoi and Tetrapoda have been evolved from the same stock.

AN article by Dr. A. J. Ewart, published in the Proceedings of the Royal Society of Victoria (vol. xxi., part i.), deals with the longevity of seeds, and touches on several interesting side-points. The summary of a long list of germination tests shows that a large number of leguminous seeds are macrobiotic, that is, they maintain their vitality for a long period; outside this family comparatively few seeds, and those chiefly belonging to the mallow and myrtle orders, could be so described. A marked feature of most macrobiotic seeds is an impermeable coat, shown by Miss J. White to be supplied by the cuticle. The best method of inducing germination in the case of hard-coated seeds consists in steeping the seeds in sulphuric acid for a few hours.

THAT the breeding of plants with the object of tracing the results of specific raisings or crosses requires very elaborate precautions will be patent to anyone who has contemplated such work. Dr. G. H. Shull contributes an article to the *Plant World* (vol. xi.) on pedigree culture, in which he describes the precautions taken at the Station for Experimental Evolution. The soil for the cultures is sterilised in autoclaves, surface watering of the seed-pans is avoided so far as possible, and paraffin bags are used for covering up the flowers. No less important than the cultural details are the labelling of specimens and the registration of records, on which subjects the author offers some suggestions.

THE part (No. 8) of the *Kew Bulletin* recently issued is assigned to two extensive systematic articles on the Gentianaceæ; the former, contributed by Dr. A. W. Hill, deals with the genera Sebæa and Exochænium; the latter, by the director, Lieut.-Colonel Prain, traces the limits of the genera Chironia and Orphium. A note records the identification of two new rubber-yielding plants from Madagascar as *Plectaneia elastica* and *Mascarenhasia lisianthiflora*, both apocynaceous genera, but neither species appears to have much economic value.

A VOLUME of the *Memoires du Comité géologique de Russie* (part xxxviii.) is devoted to the description of certain Jurassic plants from the Caucasus and Turkestan, prepared by Prof. A. C. Seward. The collections from the Caucasus include impressions of Equisetites, also fertile and sterile fronds of *Klukia exilis, Marathiopsis Muensteri*, and a new species of Zamites. Among the Turkestan specimens, well-preserved casts provide the material for a new species, *Equisetites ferganensis*; the others are chiefly fronds of ferns such as Cladophlebis and Coniopteris, but some fragments are referred to Ginkgo and coniferous genera.

WE have received a fine *opus* registered as vol. xxv., article 19, of the Journal of the College of Science, Tokio University, in which Mr. B. Hayata describes certain flowers collected on Mt. Morrison and other slopes of the Formosan range. Some of the collections are not yet worked out. The determinations furnish indication of careful compilation, the printing is generous, and the plates form an admirable contrast to many inferior process illustrations now too often provided. The conifers supply the most notable group, as they include a Libocedrus, two new species of Juniperus, a new and only

the second species of Cunninghamia, and the genus Taiwania, fully described elsewhere. The list contains several species, some new, under the genera Quercus, Gentiana, Rhododendron, Hydrangea, and Clematis. The discovery of a species of the American genus Oreopanax is extraordinary. The general affinities lie with the flora of southern and central China, and even more closely with the flora of Japan.

THE report on rainfall registration in Mysore for 1907 has been sent to us by Mr. N. V. Iyengar, chief observer in charge. The average rainfall over the whole of the province during 1907 was 6·6 per cent. in excess of the mean for the last thirty-eight years; this result was chiefly due to excessive rainfall in the Shimoga and Kadur districts. The actual rainfall of the year 1907 and the average for 1870–1907 are exhibited cartographically, and the whole work gives evidence of careful preparation.

WE have received the Bulletins of the Philippine Weather Bureau for September and October, 1907, prepared under the direction of the Rev. Father Algué. In addition to daily and monthly means, earthquake reports, and agricultural notes for a number of stations in the archipelago, they contain much useful information relating to the meteorology of a large portion of the North Pacific, for the net-work of the service includes stations far to the east, in the W. Caroline and Ladrone Islands. These outlying stations make it possible to announce the existence of typhoons in the Pacific long before their influence is felt to any extent in the Philippines, and to send useful warnings to other organisations in the Far East. Tracks of four such cyclonic storms which occurred in September are plotted, all of which re-curved at great distances from the Philippines. The disastrous typhoon which visited Hong Kong on the morning of September 18, 1906, without having given on the previous evening indication of its approach, has led the watchful observers at Manila to add an electrical alarm attachment to their mercurial barograph. This invention is fully described, with illustrations, in the October bulletin. At the close of the day the attachment is so adjusted that "the forecaster may retire for the night with the assurance that he will be warned faithfully in case the barometer should take a sudden plunge downward."

IN NATURE of July 16 we reviewed the report of the Japanese Earthquake Investigation Committee on the secondary oscillations of oceanic tides. The last number of the *Bollettino della Società Sismologica Italiana* (vol. xii., No. 11) contains a memoir on the same subject, by Dr. E. Oddone, whose researches had been carried out independently, and communicated to the society before the publication of the Japanese report. Dr. Oddone recognises the fact that these secondary oscillations, as well as the seiches of lakes, can only exist when they synchronise with the natural period of vibration of the water contained in the bay or lake, but points out that if this were the only controlling factor, and the phenomenon merely one of resonance and the selection of vibrations, we should find seiches and secondary tidal oscillations of every period. He asserts that this is not the case in nature, and that on tabulating all the periods which have been observed they are found grouped in the neighbourhood of a period of sixty-six minutes or of its harmonics; as sixty-six minutes is the calculated period of elastic vibration of the earth as a whole, and the periods most frequently observed in the secondary tidal undulations and seiches agree with those which, in another memoir, Dr. Oddone had indicated as seismic constants, he comes to the conclusion that the exciting cause of both seiches and of the secondary undulations of the tides is to be found in the deformation of the earth as a whole, which, acted on by some internal or external force, tends to take on an elastic vibration of a constant period uninfluenced by the nature of the exciting cause. These vibrations are communicated to bodies of water, and reinforced when the natural period of oscillation of one or more sections of the basin corresponds to generating rhythm or one of its harmonics. Whether this conclusion is accepted or no, the paper is a suggestive one and useful, if only for its summary of the published researches and observations on the subject with which it deals.

THE most important contribution to the second issue of the Bulletins and Memoirs of the Société d'Anthropologie of Paris for the current year is an elaborate paper by Dr. Rivet, in which he sums up the results of the discussions on the remains of primitive man discovered in 1843 in a cave near Lagoa Santa, Minas-Gérães province, in the upper San Francisco basin of Brazil. In all eighteen skulls, the majority of which are in the Copenhagen Museum, are available for examination. Unhappily the age of the remains discovered by Lund cannot be clearly fixed; but from the associated fauna they may be assigned to the Pliocene or post-Pliocene period. In general, the skull form is dolichocephalic. Dr. Rivet enters upon an elaborate comparison of these specimens with those of the allied Paltacalo group. He attempts to show, with some measure of success, that these remains represent the primitive inhabitants of Southern and Central America, these having been dispersed by an intruding race into the outlying districts in Brazil, Patagonia, Chili, and California, where their physique was to some extent modified by their later environment. There is, perhaps, no part of the world where our information regarding primitive man is more deficient than in the region covered by this contribution; and it can hardly be said that the skulls available for examination are sufficient to support far-reaching speculations. It may be hoped that further craniometrical evidence will soon become available to supplement the material which the writer has collected with such devoted labour.

THE Government Museum and Connemara Library at Madras, under the management of Mr. E. Thurston, continues to make satisfactory progress. One of the most interesting features of the museum is the extensive ethnographical collections which have been made by the curator in the course of his annual tours. Southern India is particularly rich in examples of demon-worship, sorcery, and magic. Among recent acquisitions is a remarkable example of sympathetic magic in the shape of a wooden representation of a human being which was washed ashore on the coast near Calicut. The figure is made of soft wood, and is eleven inches in height. The arms are bent on the chest, and the palms of the hands are placed together, as in the act of saluting. A square cavity, closed by a wooden lid, has been cut out of the middle of the abdomen, and contains tobacco, narcotic hemp, and hair. An iron bar has been driven through the body, and terminates in the abdominal cavity. A sharp cutting instrument has been driven into the chest and back in twelve places. A similar figure, life-size, was washed up on the same coast some years ago, and is figured in Mr. Thurston's "Ethnographic Notes in Southern India" (plate xix.). These figures seem to be peculiar to the Laccadive Islands, the people of which are notorious sorcerers. They apparently represent persons possessed by an evil spirit, which is

symbolically nailed to the figure, with certain offerings of propitiation, before the latter is flung into the sea, in order to free the islands from its presence. The theory that spirits can be shut up in jars or figures is familiar in the tale of the Jinnee in the "Arabian Nights," and is accepted by savages and semi-savages in many parts of the world.

OWING to the enormous reduction in the price of aluminium which has recently taken place, it seems quite likely that this metal will be largely employed instead of copper in many instances, for example, as a conductor, and it is also probable that it will be used in place of tin. At one time it was a difficult matter to roll out very fine sheets of aluminium, but further experience has enabled the manufacturers to roll sheets even finer than that of the ordinary tin foil. Aluminium rolled out in this manner will probably in the near future replace tin foil for a great many purposes, for example, the covering of chocolates and food-stuffs, also for wrapping up materials for keeping out damp. Tin is, at the present, about double the price of aluminium, and it has, furthermore, to be borne in mind that the specific weight is about one-eighth that of tin, consequently, weight for weight, it is possible to roll out eight times the number of sheets from aluminium to what could be obtained from tin. Tin salts are more or less poisonous, whereas aluminium salts, at any rate in small quantities, are practically harmless, so that children eating sweetmeats from which they have not taken the trouble to remove the tin foil might do themselves considerable harm, but if aluminium were substituted for tin the chances of doing themselves ill would be far less.

THE relatively high electrical resistivities of alloys as compared with the resistivities of their constituents has been attributed in succession by Lorenz, Ostwald, Rayleigh, and Liebenow to the thermoelectric effects produced by the passage of the current through minute layers of the constituents of the alloy arranged in series with each other. Herr E. L. Lederer, of the University of Prague, has determined the resistances of wires of a number of alloys by the bridge method and by measuring the heat developed in the wires by means of a calorimeter. His results are given in the February number of the *Sitzungsberichte* of the Academy of Science of Vienna, and the resistances determined by the two methods appear to agree to within less than 1 per cent. Herr Lederer concludes that the thermoelectric theory of resistivity of alloys is therefore untenable.

IN our account of the "Mathematics and Physics at the British Association," Prof. Lamb is credited with saying (NATURE, November 5, p. 24):—"The daily variation of temperature is not harmonic, and when it is analysed there is a definite component with a half-day period. The objection to attributing the semi-diurnal pressure variation to this is that the latter is extremely regular, while the temperature variation changes considerably with the locality." Prof. Lamb writes to us to explain that this contains a passage which conveys a rather different meaning from what he (at any rate) intended to say. He does not think there is any valid objection to attributing the semi-diurnal pressure variation to the semi-diurnal component of temperature vibration on the above-stated ground. "A forced oscillation whose amplitude is exaggerated owing to the near coincidence of its period with a free period has necessarily all the simplicity and regularity of the corresponding free mode." We are glad to have the opportunity of correcting our report in accordance with this communication.

ALTHOUGH the study of the refractive indices of gases may be expected to lead to theoretical conclusions of great importance, no very definite conclusions have been drawn until recently from the existing experimental data. This is partly due to the delicacy of the physical measurements involved, but chiefly owing to the difficulty of obtaining the gases in a pure state. The first regularity in the refractivities of a series of chemical gaseous elements was pointed out by Mr. C. Cuthbertson in connection with the argon group, and in the current number of *Science Progress* he gives a clear and interesting *résumé* of the present state of knowledge as regards gaseous refractive indices. The refractivities of the five gases helium, neon, argon, krypton, and xenon are found to be almost exactly in the ratios of 1, 2, 8, 12, and 20, and Mr. Cuthbertson has detected a similar set of ratios in other chemical groups, notably in the halogen and oxygen groups. There can be no doubt that the discovery of the cause of this simple numerical relation will throw light on the structure of the atoms. As is pointed out in the article, there is still room for much experimental work, some of it of a high order of difficulty, before the true meaning of these remarkable relations can be elucidated.

MESSRS. GEORGE ROUTLEDGE AND SONS, LTD., have published a second edition of "The Case for the Goat, with the Practical Experience of Twenty-five Experts," edited by "Home Counties." This edition includes some new data on goat-keeping and new illustrations, while the opportunity has been taken to make various emendations.

WE have received from Messrs. E. and F. N. Spon a copy of the second edition of Mr. C. J. Woodward's "A B C Five-figure Logarithms for General Use." In this edition an index has been given on the inside pages of the cover to find the page on which a given logarithm of an arc function will be found, and a table of natural arc functions to each minute of arc to four places of decimals has been added. The price of the volume is 3*s*. net.

THE fourth part of the first volume of Proceedings of the Association of Economic Biologists, that for September, 1908, is now available. It is chiefly devoted to the papers read at the meeting of the association held in London on April 15 of this year, and reported in our issue of April 23. The number also contains a summary of a meeting held on July 4, and the annual report.

A SERIES of excellently produced catalogues has been received from Messrs. Ross, Ltd., of New Bond Street and Cockspur Street, London. Catalogue No. 1 deals with photographic lenses; field, studio, and hand cameras; lanterns, and the numerous miscellaneous accessories required by the photographer. The price of this catalogue is one shilling. A second booklet is entitled "Aids to Vision for Naval and Military Officers, Sportsmen, Naturalists, &c.," and is devoted to descriptions, with prices, of such instruments as prism binoculars, field glasses, telescopes, sextants, magnetic compasses, barographs, and barometers. The remaining pamphlet, called the "Ross Bird-stalker," is a report by Mr. Charles Dixon on the advantages, possibilities, and uses of the Ross prism binocular, as applied to field natural history. All the catalogues include, in addition to the more usual illustrations of instruments, numerous beautiful process pictures of objects and scenes reproduced from photographs.